## **United States Patent**

[54] PACKING BOX WITH COLLAPSIBLE TAKE-OUT

[50] Field of Search...... 229/51WB,

U.S. Cl.....

**OPENING** 

[52]

[51]

2 Claims, 14 Drawing Figs.

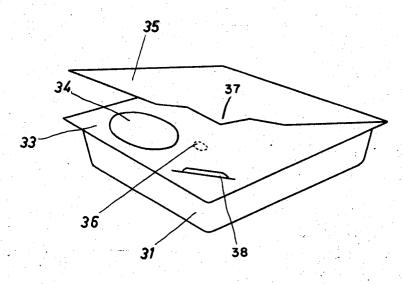
[72]	Inventor	Karl Klein Upper Hesse, Germany	[56]	References Cited
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[22]	Filed	Apr. 29, 1968	1,746,006	
[45]	Patented	Jan. 19, 1971	2,083,158	6/1937 Ramsey 229/85X
[73]	Assignee	Hassia Verpackung Karl Klein	2,266,547	12/1941 Goodwin(229/51S.C.UX)
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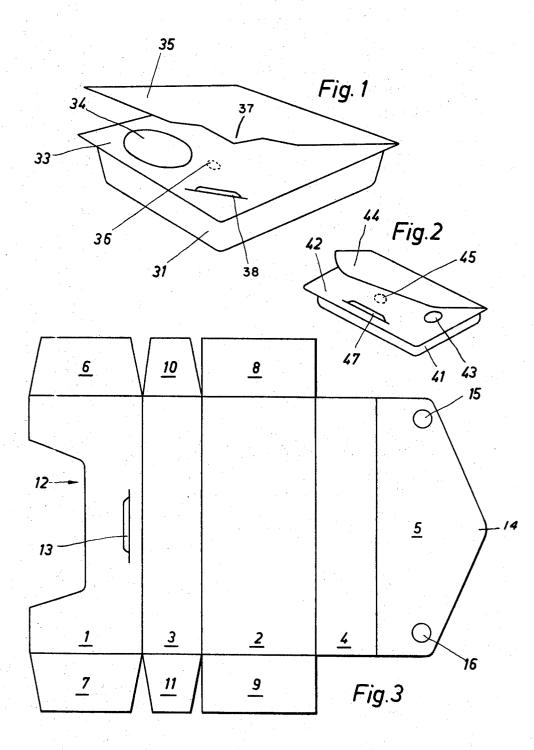
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**ABSTRACT:** A packing container having a level wall section on which the lid lies flat. The lid covers most of the section including a removal opening therein and is releasably sealed thereto. A slit is provided into which a tip of the lid is inserted for reclosing after initial opening.



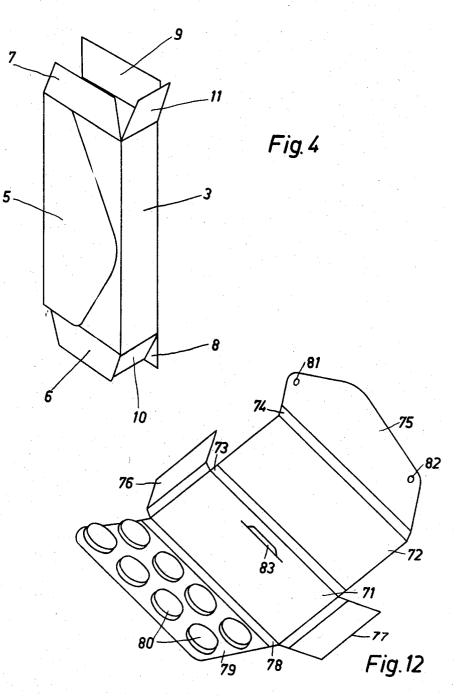
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Karl Klein, Inventor: Bierman & Bierm, Attorneys.

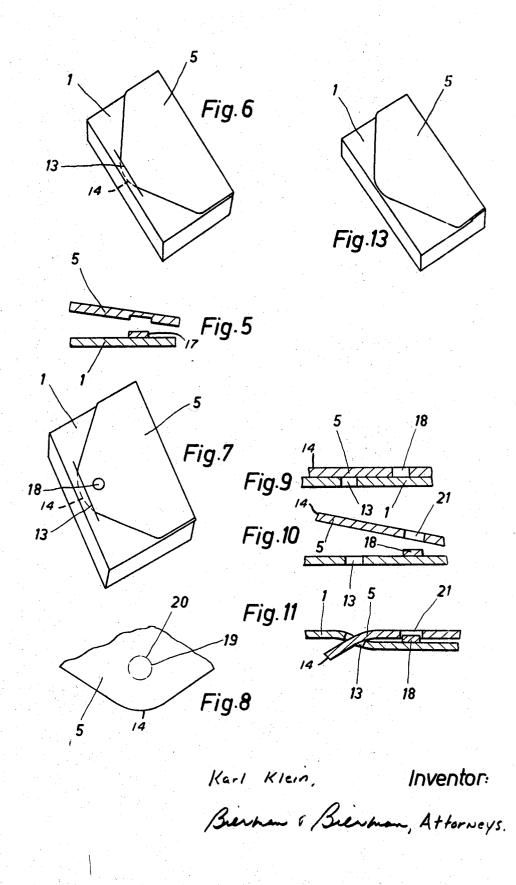
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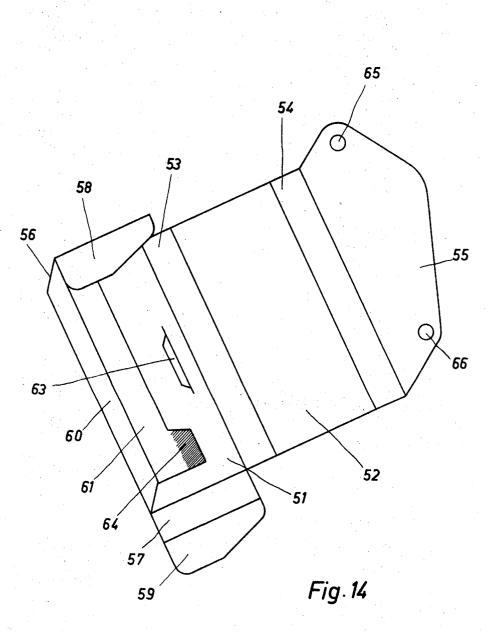


Karl Klein, Inventor: Bierman & Bierman, Attorneys.

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Karl Klein, Inventor: Bierhan & Bierhan, Attorneys.

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#### 1 PACKING BOX WITH COLLAPSIBLE TAKE-OUT OPENING

The invention relates to a packing container with a takeout opening closable by a lid of stiff sheet material, such as cardboard or the like. In particular, it relates to a folding box, but it can also apply to a deep-drawn container of plastic sheeting or to any other packing box. The sheet material of which the lid (and possibly also the entire container) is made is preferably cardboard; however plastic, metal, paper or the like and especially several of these substances in laminations can likewise be used.

According to the invention, a container of this type is provided with a new kind of closure which can be easily made on a machine, allows a simple opening of the box, can be per-<sup>15</sup> fected so as to be reclosable, and offers a more attractive appearance and easier removal of the contents of the box.

A packing container of this type is characterized in that the lid lies flat on a level wall section of the container and is joined 20 with the latter by means of a tearable adhesive joint consisting of one or more points of adhesion of dimensions that are small when compared with the area of the wall section covered by the lid. In other words, it is a matter of a container one surface of which consists of two wall sections one on top of the other, one of which is firm while the other acts as a lid, the sections being joined by an adhesive joint of very small area, by one or several points of adhesion or by interrupted lines of adhesion. The lid can in this way be easily gripped and opened with a light and equal effort when the box has to be opened, a shearing or wedging effect being then achieved. On the other hand, the closure is secure against any unintentional opening of the box. Preferably, the adhesive joint is provided at some distance from the edge of the lid. Adhesive that easily detaches itself from its base when the lid is opened can be used. Alternately, an adhesive which permits opening only with destruction of the adhesively joined material is useful for certain purposes.

Preferably, the level wall section covered by the lid has a slit or similar opening and the lid has a portion which is intended to be inserted into the slit so that a plug connection for a reclosing of the container is formed.

The takeout opening can be provided in the area of the level wall section covered by the lid. It can also be provided in a different section of the wall which after tearing open of the adhesive joint is additionally freed by folding back the accordingly designed lid. It can consist of any kind or shape of a cutout.

In one embodiment of the invention the container is deep drawn from thermoplastic sheeting. The level wall section is a cutout of cardboard or the like. The level wall section is sealed 50 onto the box as a cover to which the lid (also of cardboard) is hinged.

In a preferred embodiment of the invention the container is a parallelepipedal folding box whose front ends are formed by wall sections lying one on the other and glued one to the other 55 in a manner not meant for being reopened and whose one broad or longitudinal side is the wall section which is covered over by the lid and joined with it by a tearable adhesive joint. The special advantage of such a folding box lies in the fact that it can be manufactured on commercially available cartoning 60 machines. It differs from the known folding boxes which are closed by means of an insertable or tearable adhesive closure in that the latter are glued at their longitudinal narrow sides and at their front ends, at which points they are usually filled, closed and reopened. The folding box of the present invention 65 is closed at its front sides (at which point the box is preferably filled) by an adhesion joint not meant for reopening, and at the longitudinal or broadside of the box by an adhesive joint intended for reopening. Preferably, the tearable adhesive joint of the lid is the only adhesive joint not provided at the front 70 ends of the folding box.

The blank of the folding box is preferably designed in such a way that the front broadside, the one longitudinal narrow side, the rear broadside, the other longitudinal narrow side and the lid are joined at their respective longitudinal edges in that 75

order. Wall sections which from the front ends are joined with the lateral edges of the two broadsides (and sometimes also with the lateral edges of the intervening longitudinal narrow side). The blank prior to the joining of the front end wall sections, being formable into a tube by folding it open and tearably gluing the lid onto the front broad side.

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This tube can after closing of one front end, be filled through the open second front and then closed. The adhesive joint intended for tearing open is formed before the filling of the material. Therefore it can be manufactured very accurately on the cartoning machine.

In particular, the adhesive joint can be used as a warranty closure. Upon the first tearing, destruction of the material takes place to the extent that upon subsequent regluing of the point of adhesion, an equivalent and equally behaving adhesive joint can no longer be created. Hence, it can always be observed if the box had been opened before. To that end, the adhesive joint according to the invention is so designed that it is restricted to an area in which at least one of the mating wall sections is bounded by weakening lines, punched lines or the like which weaken its cohesion with this wall section. In particular, the area of the adhesive joint can be defined by a punched line surrounding it without interruption of lesser depth than the material thickness of the wall section. Another possibility is to surround the area of the adhesive joint with a circumferential punched line which goes through the wall section and is interrupted by narrow joining webs.

If in addition to the adhesive joint a plug connection between the lid and the wall section is provided, it is possible to arrange the adhesive joint in the push-in direction directly in front of the opening of the plug connection so that the partially punched out area of the one wall section engages the plug on insertion of the lid in the insertion opening. An especially secure plug connection against unintentional pulling out of the lid is obtained.

In all embodiments of the invention it is desirable that the lid cover the associated level wall section. It should cover at least half of its surface. Preferably, it should cover almost its entire surface.

A method for making, filling and closing of a folding box of the type described is characterized according to the invention in that a tube is first made from the blank, by folding and gluing the lid onto the front broadside. One front wall is then formed by folding in and gluing the lateral extensions. The contents are then filled through the other still open front end. The open front end is then closed by folding and gluing the corresponding wall sections in such a way that the takeout opening exposed by tearing open the lid is not the fill-in opening.

Embodiments of the invention are illustrated in the following drawings showing in:

FIGS. 1 and 2 are deep-drawn containers with lids of cardboard.

FIG. 3 is a blank of a folding box.

FIG. 4 shows the partially folded up folding box.

FIG. 5 is a cross section of the adhesive joint after having been torn open.

FIG. 6 shows the reclosed folding box after tearing open of the adhesive joint.

FIG. 7 shows another embodiment of the folding box.

FIG. 8 shows on an enlarged scale another form of adhesive joint.

FIGS. 9 through 11 shows the adhesive joint in the closed, torn open and, by insertion of the tongue, reclosed state of the folding box.

FIG. 12 shows a folding box with an attached strip of cupped compartments.

FIG. 13 shows the box according to FIG. 12, when closed.

FIG. 14 shows another blank of a folding box, partly erected.

FIG. 1 shows a container 31 deep drawn from thermoplastic sheeting. A cover 33 of cardboard overlays the opening of container 31 and is joined to it by sealing or gluing. In the carton cover 33 a takeout opening 34 for the material to be packed, e.g. dragees, candies or the like, is provided. Hinged to the cardboard cover 33 is a lid 35 also cardboard which, when closed, covers the cover 33 almost over its entire surface and more particularly closes the takeout opening  $\mathbf{34}$  and is  $\mathbf{5}$ held down by two joints of adhesion 36. The lid 35 has at one corner a tip 37 which can be inserted into a slit 38 in the cardboard cover 33.

The container according to FIG. 2 is constructed in a similar manner. Here too, a cardboard cover 42 having a takeout 10opening 43 is sealed on a deep-drawn container 41. A lid 44 is hinged to cover 42. When closed, the lid is held by a point of adhesion at 45 and covers takeout opening 43. After adhesive joint 45 has been torn open, the lid 44 can be closed again by 15 inserting the pointed part of the lid into a slit 47. Whether sealed or merely closed, the lid covers the major portion of the surface of the cover.

FIG. 3 shows a blank of a folding box with two broadsides 1, 2, two longitudinal narrow sides 3, 4, a lid 5 and extensions 6,  $_{20}$ 7, 8, 9 which are joined with the broadsides 1 and 2 and after folding in of the box are joined with one another by means of an adhesive joint not intended for reopening to form the front walls and give the box its cohesion. Two further extensions 10 and 11 are provided laterally at the longitudinally narrow side 25 3 joining the broadsides 1 and 2. When the box is folded in, extensions 10 and 11 are laid inwardly of the extensions 6 and 8, 7 and 9 respectively. Extensions 10 and 11 need not, however, be glued with extensions 6 and 8 and 7 and 9. The broadside 1 of the box has a large cutout 12 which facilitates access to the 30 box contents. A slit 13 is also punched in the broadside 1. Slit 13 provides for the insertion of the obtuse-angled end of the lid 5.

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Two small areas 15 and 16 are defined at the corners of the lid 5, by means of one circular punch each. The punch does 35 not completely penetrate the material of the lid. FIG. 4 shows the folding in of the box. Extensions 6 and 8 and 7 and 9 forming the front ends are glued to each other. The box is then ready for filling of the contents. As contents for the troughlike container shown, several strips of cupped packs of tablets may 40be used.

As shown in FIG. 4, the cut is first folded to form a tube. The adhesive joint limited to the two adhesion points 15, 16 is then formed. Of course, in this case as in all the other described cases the adhesive joint can also be a heat-sealed 45 joint. One of the two front ends is then closed by folding in and gluing together of the extensions 10, 6, 8 (in this order) and the box is turned so that the still open front end is at the top. The box is then filled with the particular content through this front end. The open front end is then closed by folding in and gluing together the extensions 11, 7, 9. The box is now closed and to open it the adhesive joint between lid 5 and broadside 1 is used. This closure is a warranty closure. With the first tearing open of the adhesion joint the area of the points of adhesion which is separated from the remaining surface of the lid 5 by the circular punching is severed from the lid in such a way that a portion 17 of the wall thickness of the lid tears away and sticks to the thereunder lying broadside of the box, as shown schematically in FIG. 5. The presence of this torn off material 17 on the outside of the broadside 1 indicates that the box has been opened before. The adhesion joint cannot be recreated in the way it was before even by a subsequent application of an adhesive on exactly the same spot. With such a resealed opening, the sharp and clearly defined area 17 would not tear off of 65 the lid 5, but rather large and irregular shreds would form. The lid 5 itself retains after the first opening a clean appearance with two sharply punched out holes left behind by the torn out adhesion points.

closed again by inserting the tip 14 of the lid 5 in the slit 13, as shown in FIG. 6.

It is seen that in the container shown the spot bond according to the invention is the only one existing at the broad and longitudinal narrow sides as the adhesive joint. This makes 75 manufacture easier. In addition, the blank shown in FIG. 3 can be worked on any commercially available cartoning machine.

In the embodiment of the box shown in FIG. 7 only a single point of adhesion 18 is present. It is located near tip 14 of the lid 5 and directly in front of the insertion slit 13. In this case it is preferable to bound the area of the adhesion point 18 with punched lines which completely penetrate the material of the lid 5. As shown in FIG. 8 on an enlarged scale, this circular punched line 19 is interrupted by thin webs 20 which connect the bounded area with the rest of the lid 5.

FIG. 9 shows the adhesive joint, when closed. Directly behind the adhesive joint, in the wall 1 of the box, an insertion slit 13 is provided. On tearing open of the adhesive joint the webs 20 are torn through and the area 18 remains in full thickness of material on the wall 1. A cleanly punched out hole 21 remains in the lid 5. As shown diagrammatically in FIG. 11 (the thickness of the wall sections in this drawing has been exaggerated for the sake of clarity), upon subsequent closing of the box, lid 5 is inserted in slit 13. Area 18, sticking to the wall section 1, engages hole 21 as a locking member. This complicates the pulling out of the lid 5 from the slit 13. In this way, an insertion joint which is especially safe as against unintentional opening is created.

In the container shown in FIG. 12 a folding box cut is provided which consists of broadsides 71 and 72, longitudinal narrow sides 73 and 74, lid 75 and front and folding extensions 76 and 77. A further narrow side part 78 is joined to the broadside 71. A section 79 of deep drawn cupped boxes of the commercially available kind is glued to narrow side part 78. Section 79 in its simplest form consists of a strip of a thermoplastic sheet into which containerlike depressions 80 are formed by deep drawing. A tearable foil, especially an aluminum foil, is pasted over the openings of depressions 80.

Pressure on the bottoms of the depressions 80 will force the contents, tablets for example, to squeeze out by tearing open the aluminum foil. To close the box, the section 79 is hinged about the narrow side 78. The extensions 76 and 77 are then folded thereonto. The broadside 72 is then folded. Finally, the

lid 75 is folded on the broadside 71. The lid 75 is fastened on the broadside 71 with adhesion or sealing points 81 and 82 which are designed similarly to those of the box shown in FIG. 3. To reclose the box after the end 75 has been torn open, a slit 83 is provided in the broadside 71.

In the packing box according to the invention, the adhesion or sealing points are always limited to a comparatively small area which preferably should be surrounded by punched lines or the like. The procedure in the fabrication of the container according to the invention differs from the usual technique. 50 The application of the adhesive or sealing compound is centered, i.e. the cut is aligned prior to the application of the adhesive or sealing compound and centered relative to the application tools for the adhesive compound. For the centering, either the punchings of the cut, or a diagram printed thereon, 55 or subsequent additional punchings (especially those for defining of the adhering portions) can be used.

A further folding box blank which is particularly advantageous in production is shown in FIG. 14. Inclusive of the lid 55, it has four broadside portions 61, 51, 52 and 55 so that 60 in the finished folded box the broadsides are double. The broadside 61 is provided with a removal cutout. Between the broadside portions lie the narrow side portions 60, 53 and 54. The narrow side portions and 54 double up against each other in the finished box. To form the front ends, extensions hanging laterally on the broadside portion 51 are provided. The consist of front end portions 56 and 57 and adhesion flaps 58 and 59. On the broadside portion 61, adhesion or sealing surfaces 64 are provided by means of which the adhesion flaps 58 and 59 After the first opening of the adhesive joint, the box is 70 are glued onto the folded broadside 61. This adhesive joint is not meant to be torn open. Through this simple adhesion, a pocketlike container closed on three sides is formed. Into it, the desired contents can be placed. Thereupon, the broadside 52 is folded onto the broadside portion 61, and the lid 55 is placed on the broadside 51 (which is in back as shown in FIG.

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14) where it is fastened with adhesion points 65 and 66 so as to be tearable in the already described manner. A slit 63 made in the broadside 51 serves for the insertion of the flap after the tearing.

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I claim:

1. A packing box with a takeout opening closeable by a lid of stiff sheet material characterized in that the box is a deepdrawn container of thermoplastic sheeting, the lid lies flat on a 6

level walled section of the container and is joined with it by means of a tearable adhesive joint consisting of at least one adhesion point of dimensions that are relatively small when compared with the area of the walled section covered by said lid, 5 and the lid is hinged to said section.

2. A box according to claim 1 wherein said lid is of cardboard and said section is sealed onto said box as a cover.